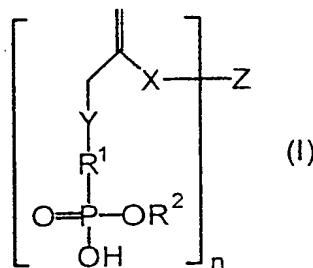


Claims

1. Acrylophosphonic acid of the general formula (I), stereoisomers thereof or mixtures of these



in which R^1 , R^2 , R^3 , X , Y , Z and n have the following meanings:

R^1 = a linear or branched C_1 to C_{10} alkylene or C_6 to C_{14} arylene radical;

R^2 = hydrogen, a linear or branched C_1 to C_{10} alkyl or C_6 to C_{10} aryl radical;

Y = oxygen, sulphur, C_1 to C_8 alkylene or is absent;

n = 1, 2, 3, 4 or 5;

where

X = CN , n = 1 and Z = is absent or

X = $CONR^3$ with

R^3 = hydrogen, a linear or branched C_1 to C_{10} alkyl radical, or a C_6 to C_{10} aryl radical;

provided that

for n = 1

Z = hydrogen or a linear or branched C_1 to C_{10} alkyl radical, or a phenyl radical; and

for n = 2 to 5

Z = an aliphatic, aromatic, or araliphatic, linear or branched hydrocarbon radical with 1 to 14 carbon atoms, substituted n times with the structure of formula (I) in

brackets, where Z and R³ may also be part of a common ring, and where

the individual radicals may be substituted or unsubstituted.

Sub A3

2. Acrylophosphonic acid according to claim 1, characterized in that the variables of formula (I) have the following meanings independently of each other:

R¹ = a linear or branched C₁ to C₅ alkylene radical or phenylene;

R² = hydrogen or a linear C₁ to C₃ alkyl radical;

Y = oxygen or is absent;

X = CN or CONR³ with

R³ = hydrogen, a linear C₁ to C₆ alkyl radical, a phenyl radical or together with Z part of a six-membered ring;

n = 1 or 2; and

Z = hydrogen or a linear or branched C₁ to C₁₀ alkyl radical, a phenyl radical or together with R³ part of a six-membered ring (for n = 1); or

Z = a linear C₁ to C₁₀ alkylene radical or together with R³ part of a six-membered ring (for n = 2).

3. Acrylophosphonic acid according to claim 2, characterized in that the variables of formula (I) have the following meanings independently of each other:

R¹ = a linear C₁ to C₄ alkylene radical;

R² = hydrogen or a methyl radical;

Y = oxygen;

X = CONR³;

R³ = hydrogen or a linear C₁ to C₅ alkyl radical; and

Z = hydrogen or a linear C₁ to C₆ alkyl radical (for n = 1); or

Z = a linear C₁ to C₅ alkylene radical (for n = 2).

Sub A3

4. Acrylolphosphonic acid according to one of claims 1 to 3, characterized in that the radicals R^1 , R^2 , R^3 and/or Y are unsubstituted.
5. Acrylolphosphonic acid according to one of claims 1 to 4, characterized in that the radical Z is unsubstituted or is substituted by $=O$, $=S$, $=NR^2$ or $-NR^3-CO-C(=CH_2)CH_2-Y-R^1-PO(OH)_2$.
6. Use of the acrylolphosphonic acid according to claims 1 to 5 as a component of an adhesive, of a polymer, of a composite, of a cement, of a molded article and in particular of a dental material.
7. Use according to claim 6, characterized in that the dental material is a dental adhesive, a fixing cement or a filling composite.
8. Use according to claim 6 or 7, characterized in that the acrylolphosphonic acid is present in at least partially polymerized form.
9. Dental material, characterized in that it contains an acrylolphosphonic acid according to claims 1 to 5.
10. Dental material according to claim 9, characterized in that it contains the acrylolphosphonic acid in at least partially polymerized form.
11. Polymers and copolymers, characterized in that they can be obtained by polymerization or copolymerization of an acrylolphosphonic acid according to one of claims 1 to 5.